United States Patent [19]

Marshall, Sr.

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[54] **LIQUID PUMP AIR RELEASE SYSTEM**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 914,809, Oct. 3, 1986, Pat. No. 4,758,227.

[51] **Int. Cl.**[4] **A61M 5/00**

[52] **U.S. Cl.** **604/152;** 604/236; 604/247; 604/122; 417/443

[58] **Field of Search** 604/156, 152, 154, 131, 604/236, 247, 122, 124, 125; 417/520, 443

[56] **References Cited**

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[57] **ABSTRACT**

Air entrained in a pumped liquid is released from a pumping chamber operated by a single piston and having an outlet passage controlled by a back-seating valve biased closed by a spring, when the piston near the end of its compression stroke causes positive mechanical engagement to open the outlet valve.

6 Claims, 3 Drawing Sheets